(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 451 202 B1**

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **20.07.94**

(51) Int. Cl.5: **A61K 9/70, A61L 15/00**

(21) Application number: **90901473.0**

(22) Date of filing: **22.12.89**

(86) International application number:
PCT/US89/05798

(87) International publication number:
WO 90/07328 (12.07.90 90/16)

(54) APPLICATION SYSTEM FOR DRUG CONTAINING MICROEMULSIONS.

(30) Priority: **29.12.88 DE 3844247**

(43) Date of publication of application:
16.10.91 Bulletin 91/42

(45) Publication of the grant of the patent:
20.07.94 Bulletin 94/29

(84) Designated Contracting States:
DE FR GB IT

(56) References cited:
EP-A- 0 153 200
US-A- 4 592 753
US-A- 4 655 768

ORBIT SEARCH SERVICE, File USPA, US-A-4898592 (LAITZKE, ARNO W. ET AL:), 6 February 1990

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EP 0 451 202 B1

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ATTORNEY DOCKET NUMBER:010177-211999
(Cam No. 008653-999208
SERIAL NUMBER: 09/910,308
REFERENCE: B06

Description

DESCRIPTION

The invention deals with a device, in particular with a bandage strip, for a transdermal delivery of a drug to a patient with a reservoir for storing and delivering the drug onto the skin of the patient and with a carrier element for carrying the reservoir, whereby this carrier element is provided with a skin-compatible adhesive layer, by which the device is adhered to the skin of the patient in the application state, and with a peelable protective film (liner) covering the adhesive layer and the reservoir at the side of delivery in the state of storage.

It has been known to orally administer drugs in the form of droplets, tablets, pills or powders. The drugs will reach the intestinal tract via the esophagus and the stomach and will be absorbed in this manner by the body. By the administered amounts, which are given several times per day in certain dosages, a drug influx is achieved each time. After the absorption in the gastro-intestinal tract, the drug is passed into the liver, where in many cases, a more or less pronounced transformation into less effective metabolites takes place. This so-called "first pass effect" will be by-passed by a transdermal drug delivery, where the drug is applied on the skin and diffused through the skin directly into the blood stream, while by-passing the gastro-intestinal tract.

For the transdermal delivery of drugs, application fields for various kinds of drugs have been known. For instance, a bandage strip of the aforementioned kind (described in the laid-open European Patent Application 153 200) contains a carrier element with a central section having a cross-section of a truncated cone open at the bottom, which forms the reservoir containing the solution or suspension of the drug to be delivered. Furthermore, the carrier element is provided with a skin-compatible adhesive layer and a peelable protective film covering the adhesive layer and the opening area of the reservoir in the state of storage (see fig. 1b in conjunction with p. 7, paragraph 1 and the summary of the said European patent application). This known bandage strip is found to be disadvantageous due to the fact, that a low-viscous medium containing the drug, will be easily spilled or be spread over the skin area, to which it is to be administered in a specific target area, while attempting to peel off the protective film and placing at the same time the bandage strip onto the skin of a patient, whereby the desired effect will not be achieved. If the solution or suspension containing the drug is diffused through the skin after the application of the bandage and if still a further amount of the solution or suspension is to be administered to the patient, the bandage has to be removed from the skin and has to be replaced by a new bandage. Furthermore, there is the danger of a leakage during storage, due to a lateral migration of the solution or suspension into the adhesive layer coated on the carrier material, resulting in an insufficient adhesion of the bandage strip during the later application.

Furthermore, a device for the transdermal delivery of an active ingredient has been known (U.S. Pat. No. 4,597,961), whereby a hollow cavity in an impermeable flexible material of poly(vinyl chloride), polypropylene, nylon or silicone rubber serves as a reservoir for a liquid formulation of an active ingredient to be transcutaneously applied. This flexible material is coated at the side of delivery with a skin-compatible adhesive layer and fitted with a protective film sealing the opening area of the hollow cavity (see fig. 1 in conjunction with column 5, lines 7 to 21, and also the summary of U.S. Pat. No. 4,597,961). For this device, too, the disadvantages described above are experienced accordingly.

It has also been known (laid-open European patent application 113 562, page 1, paragraph 2 from the bottom) to blend a drug with an adhesive and to apply this mixture on a suitable carrier material in several layers, whereby the concentration of the drug in the adhesive is chosen in such a way, that the last applied layer, i.e. the layer directly in contact with the skin, has the lowest concentration of the drug, and that the layer the furthest away from the skin, has the highest concentration of the drug. Thereby, the reaction mechanism is determined, namely due to the highest concentration being in the layer the farthest away from the skin, the drug delivery through the skin will occur at an about uniform permeation rate.

The objectives to be achieved by the invention deal with the development of a device for a dermal delivery of a drug onto the skin of a patient according to the aforementioned kind, whereby a defined amount of a liquid preparation of a drug will be exactly fixed at a location on the skin intended for the application and to be delivered during a defined time of application, and whereby a lateral migration of the medium containing the drug will be prevented during the state of storage as well as also during the usage of the device, since this kind of migration will result in a deterioration of the adhesion to the skin. This migration needs to be particularly considered, if micro-emulsions are used as the medium containing the drug exhibiting a high surface activity and a low surface tension, whereby in particular a leakage during the storage of the device is to be prevented.

These objectives have been achieved according to the invention in regard to a delivery of highly viscous ointments or pastes, whereby the carrier element is formed by a relatively flat foamed piece of material with closed pores, which is traversed between the opposite surfaces by a punched out perforating hole forming the reservoir, in which the highly viscous drug preparation (paste or ointment) is placed to be slowly diffused through the skin during the final usage of the device, and whereby a polymer film coated with an adhesive, is placed onto the surface of the foamed material piece at the side opposite the side carrying the skin-compatible adhesive layer, thereby covering the reservoir at the fill-in side, and whereby the peelable protective film consists of an adhesion releasing protective film preventing a lateral migration during the storage of the device.

Advantageous further developments of the device according to the invention are described in the patent Claims 2 to 11.

For a transdermal delivery of low-viscous solutions, the device according to the invention is formed in such a way that the carrier element consists of a non-woven fleece tape with an adhesive layer applied to its bottom side, to which an element of an absorbent material forming the reservoir, is adhesively attached at the fill-in side, whereby a filling opening for at least one low-viscous drug solution is provided traversing the non-woven tape and its adhesive layer and forming a communicating connection with the absorbent element, which is saturated with the low-viscous drug solution in the state of storage of the device, and whereby the surface of the non-woven fleece tape is provided with a cover coated with a pressure-sensitive repeatedly usable adhesive layer covering the filling opening, and whereby the peelable protective film consists of an adhesion releasing protective film preventing a lateral migration during the storage of the device.

Advantageous further developments of this device according to the invention are described in the patent Claims 13 to 23.

The device according to the invention may be suitably used for a repeated dosed delivery of media with a high viscosity or of solutions with a low viscosity onto the skin area of a patient without requiring a removal of the device. Thereby, a particularly easily manageable and effective treatment of the patient is possible.

For a transdermal delivery of low-viscous micro-emulsions containing the drugs, the device according to the invention is formed as follows: The carrier element consists of a relatively flat foamed material piece with closed pores, on which a hot-melt adhesive layer is placed at the side opposite the side containing the skin-compatible adhesive layer, and whereby the composite structure consisting of the adhesive layer, the foamed material and the skin-compatible adhesive layer, is traversed by a punched out perforating hole, in which an absorbent material is placed absorbing the micro-emulsion containing the drug, and whereby a protective film is attached to the adhesive layer at the filling side covering the punched out openings and, thereby, preventing a lateral migration of the micro-emulsion adsorbed at the absorbent material and containing the drug preparation, and whereby the peelable protective film (liner) is attached to the skin-compatible adhesive layer, covering and sealing the punched out opening at the delivery side during the storage of the device, and whereby the peelable protective film consists of an adhesion releasing protective film preventing a lateral migration during the storage of the device.

Advantageous further developments of this device according to the invention are described in the patent Claims 25 to 33.

The selection of the adhesive in the composite structure, depends on the type of the employed foamed material. Suitable hot-melt adhesives are well known to the skilled artisan. By heat-sealing the hot-melt adhesive layer and the polyethylene film vapor coated with aluminum, a very strong bond between the foamed material piece of polyethylene and the cover film covering the reservoir is obtained effectively preventing a lateral migration of the low-viscous micro-emulsion contained in the absorbent material.

It is important that the thickness of the absorbent material contained in the punched out cavity is slightly less than the thickness of the polyethylene foam-piece for avoiding a pressing of the micro-emulsion into the interface between the pressure-sensitive adhesive and the cover (the protective layer).

The peelable protective film coated in a particular pattern with a silicone or another adhesion releasing material will provide a reliable barrier for preventing a lateral migration of the micro-emulsion between the peelable protective film and the surface of the skin-compatible adhesive layer while the device is stored.

For achieving a sufficiently long storage time of a ready-to-use bandage strip, a particular property of the peelable protective film is required, which depends on the physico-chemical properties of the liquid medium containing the drug component. The peelable protective film has to exhibit a good barrier effect against an under-migrating of the adhesive and has to be readily peelable during the application of the bandage. Due to the possibility to vary the ratio of the sizes and/or of the shapes of the coated and non-coated part-areas of the pattern on the surface of the protective film, an optimizing

of a suitable barrier property and of a favorable peelability of the protective film is achievable.

Even in the cases where the properties and viscosity of the micro-emulsion will assure an extremely good diffusion through the skin of the patient, by which at the same time also the dangers of an undermigrating of the skin-compatible adhesive layer by the micro-emulsion will be extremely increased, the particularly formed protective film will prevent any kind of leakage of the micro-emulsion during the storage of the device.

Preferably, the skin-compatible adhesive may consist of components which prevent a penetration by the micro-emulsion containing the drug.

Advantageous forms of execution of the device according to the invention, by which the various viscosities of the drug formulations to be applied in a transdermal delivery system are taken into account, shall be further explained by referring to the attached drawings:

- Fig. 1 illustrates a topview of a form of execution of the device for a dermal delivery of ointments or pastes, i.e. drug formulations with a high viscosity;
- Fig. 2 is a sectional schematic layout of the form of execution shown in Fig. 1;
- Fig. 3 illustrates a topview of another form of execution of the device for a dermal delivery of highly viscous drug formulations;
- Fig. 4 is a sectional schematic layout of the form of execution shown in Fig. 3;
- Fig. 5 illustrates a topview of a form of execution of the device for a dermal delivery of low-viscous solutions;
- Fig. 6 is a sectional schematic layout of the form of execution shown in Fig. 5;
- Fig. 7 is a sectional schematic layout of a modification of the form of execution shown in Fig. 5;
- Fig. 8 is a sectional schematic layout of a form of execution of the device for a transdermal delivery of micro-emulsions containing the drugs;
- Fig. 9 illustrates a topview of the form of execution shown in Fig. 8; and
- Fig. 10 illustrates a topview of the surface of the peelable protective film to be placed onto the skin-compatible adhesive layer of the device.

As seen in Fig. 1 and 2, a reservoir (5) has been punched out in a foamed material piece (2) containing closed pores. The one surface of this foamed material piece (2) is provided with a skin-compatible adhesive layer (3), which in turn is covered by a siliconized protective film (4) consisting of paper or another suitable material. The protective film (4) of paper is provided with a pull-off strap (6) and covers the punched out reservoir (5) in the foamed material piece (2) during the storage of the bandage strip. As shown in Fig. 1, the reservoir (5) has a circular cross-section. As recognized in Fig. 2, the adhesive layer (3) is peripherally encasing the punched out reservoir (5).

The opposite surface of the foamed material piece (2) is covered by a polymer film (1) by means of an adhesive (3a). This polymer film (1) may be transparent and micro-perforated and may be removably adhesively attached. The adhesive (3a) may be repeatedly usable.

This bandage strip is applied in a manner, whereby at first the protective film (4) of paper is peeled off and the bandage strip is placed onto the skin in such a way that the location of the skin to be treated is visible in the reservoir (5).

Then, the transparent polymer film (1) on the opposite surface of the foamed material piece (2) is lifted and the highly viscous drug formulation will be placed into the reservoir (5). However, the highly viscous drug formation may also already earlier be placed into the reservoir (5) in the state of storage of the bandage strip or may be placed into an open-cell foamed material piece. After the application, the drug will slowly penetrate into the skin, whereby the medicinal treatment of the patient will take place.

In Fig. 3 and 4, a modification of the earlier described form of execution is shown, where a non-transparent polymer film (cover) (1) is used and the respective adhesive layers (7) and (8) with different properties.

Opposite the pull-off strap (6), the polymer film (1) is provided along the crosswise edge with an adhesive strip (7) of an adhesive with a high adhesive strength. The adhesive strip (8) adjacent to the pull-off strap (6), is formed from a (repeatedly usable) adhesive of a lower adhesive strength. This adhesive strip (8) of an adhesive with a low adhesive strength may consist either of a relatively narrow strip adjacent the pull-off strap (6) or of a wider strip covering the area up to the strip (7). In this foamed material piece (2), the reservoir (5) has again been punched out.

EXAMPLE 1

A device according to the invention for administering a highly viscous ointment or paste, was prepared as follows:

A polyethylene foam piece with closed cells and about 1 to 2 mm thick was coated at both sides with an acrylate adhesive.

Then, holes with a diameter of e.g. 30 mm, were punched out of the coated foam piece.

A 40 µm thick polypropylene film, micro-perforated, was laminated onto one of the surfaces of the polyethylene foam piece coated with the acrylate adhesive.

Then, open-cell polyurethane foam pieces of a polyether base and with a low initial density were placed into the punched out openings.

In this polyurethane foam piece, the ointment will be placed at the later application. Then, a protective polyester film fully coated with a silicone or another adhesion releasing material was laminated on the still remaining area of the adhesive layer.

Then, the laminate was cut into individual pieces of a suitable size of, e.g., 50 mm x 60 mm.

The transdermal administration of drug formulations with a low viscosity is in part substantially more difficult, since the drug formulations can often not be retained at the location needed for the treatment. Furthermore, the concentration of a drug formulation with a low viscosity is relatively difficult to be attained on a small skin area.

However, the forms of execution of the device illustrated in the Figures 5 to 7, advantageously permit a reliable delivery of drugs or drug formulations, respectively, with a low viscosity.

As seen in Fig. 5 and 6, an absorbent material piece (11) shaped, e.g., as a small circular disk, is held in place by a tape (9) of a non-woven fleece coated with an adhesive layer (10) and fitted with a small filling opening (12) situated above the center of the absorbent disk (11). Via the punched out filling opening (12) in the non-woven fleece tape (9) and the attached adhesive layer (10), the low-viscous drug formulation may be refilled each time as needed by lifting the cover (15) covering the filling opening (12) and by closing the cover again after the drug formulation has been filled into the disk (11) via the filling opening (12). The cover (15) is fitted with a pull-off strap (14). The dosing of the amount to be delivered, may be carried out by the patient himself. The disk (11) of an absorbent material is normally saturated with the drug solutions of a low viscosity. The cover (15) is coated with an adhesive layer (13), which is repeatedly usable. The protective film (liner) (16) is readily peelable and is situated at the delivery side of the disk (11) of an absorbent material during the storage of the bandage strip.

In Fig. 7, a modification of the form of execution shown in Fig. 5 and 6 is illustrated, where an impermeable barrier layer (17) is placed on the filling side surface of the disk (11) of the absorbent material and is traversed by the filling opening (12) reaching the disk (11) in a communicating manner. The barrier layer (17) is adhesively bonded to the skin-compatible adhesive layer (10) of the non-woven tape (9) and peripherally extends beyond the disk (11). By means of this form of execution, a penetration into or an attack of the bond between the non-woven tape (9) and the skin-compatible adhesive layer (10) by certain drug solutions is avoided.

EXAMPLE 2

A device according to the invention for administering low-viscous solutions was prepared as follows:

A medical adhesive tape consisting of a non-woven rayon fleece material coated with a skin-compatible adhesive was laminated with a disk of a polyethylene film, which was vapor-coated with aluminum and also coated with a layer of a pressure-sensitive adhesive. In this laminate, holes with a diameter of about 3 mm were punched.

A piece of a non-woven fleece of viscose rayon, about 1 mm thick was placed on the pressure-sensitive adhesive side of the aluminum vapor-coated polyethylene film. The diameter of this non-woven material piece is to be smaller than the diameter of the barrier layer film.

Then, a protective paper fully coated with a silicone or another adhesion releasing material, was laminated onto the still remaining area of the pressure-sensitive adhesive layer.

For covering the filling opening, a pull-off strap in the form of a 5 mm wide and 2 cm long adhesive tape strip was placed onto the upper side of the device.

For facilitating the peeling action, a piece of an adhesive paper was attached to the end of this pull-off strap.

Then, the entire composite structure was cut into individual pieces, about 50 x 60 mm in size.

In Figs. 8 and 9, a form of execution of the device is illustrated for a transdermal delivery of low-viscous micro-emulsions containing the particular drugs. These micro-emulsions are contained in a material piece (22) of absorbent materials placed in a punched out reservoir (21) traversing the polyethylene foam piece (18) having closed cells. The thickness of the polyethylene foam piece (18) is slightly larger than the thickness of the absorbent material (22) containing adsorptively bonded the micro-emulsion of the drug to be applied, whereby a pressure equalization is possible. At the one surface of the polyethylene foam piece (18), a skin-compatible pressure-sensitive adhesive layer (19) is placed, which in turn is covered by a protective film (24) of polyester or of other suitable materials during the storage of the device.

The opposite surface side of the polyethylene foam piece (18) is preferably coated with a hot-melt adhesive layer (20) of ethylene/vinyl acetate, by which a protective polyethylene film (23), prefer-

ably vapor-coated with aluminum, is adhered. The hot-melt adhesive layer (20) and the protective polyethylene film (23) are heat-sealed with each other under the formation of a barrier against a lateral migration.

As shown in the Fig. 2, 4, 6, 7 and 8, a peelable polyester film (4, 16, 24) is placed on the skin-compatible adhesive layer (3) (see Fig. 2 and 4) and (10), respectively (see Fig. 6 and 7), and (19), (see Fig. 8) respectively, covering the reservoir (5, 11, 22) of the device at the delivery side in the storage state, whereby this peelable polyester film is coated at the side (25) facing the skin-compatible adhesive layer, with a suitable pattern of a silicone or of another adhesion releasing material and whereby the remaining non-siliconized or non-coated protective film surface will undergo an intimate adhesive bond with the adhesive layer (19), thereby forming a reliable barrier against a lateral migration of the micro-emulsion. As seen in Fig. 10, the coated part-areas (26) of the pattern, which may also be seen as islands, are uniformly formed as squares separated by non-coated stays (27) of an equal width.

However, the partial areas or islands of the pattern, respectively, may also have a circular, triangular, rectangular, elliptic, rhombic shape or the like, whereby the various geometric shapes of the partial areas (26) determine an accordingly shaping of the stays (27). For instance, if the partial areas have a circular shape, narrow stays (27) are formed between the closest adjacent edges of the circles, while the crossing areas of the stays are accordingly widened. The particular geometric shaping of the part-areas (26) and of the respective stays (27) depends on the various requirements to be met by the peelable polyester film (4, 16, 24), dealing with the offsetting demands, namely the adhesive strength on the one hand and the easy peelability or removability of the polyester film (4, 16, 24) on the other hand, as needed for the particular application case as a protective film of the bandage strip.

EXAMPLE 3

A device according to the invention for administering a micro-emulsion containing active ingredients, was prepared as follows:

A copolymer of iso-octyl acrylate and acrylamide (93:7) was dissolved in a mixture of ethyl acetate and methanol (15:1). The concentration of the copolymer in the adhesive solution is to be 15 to 30%.

The adhesive solution was spread in a suitable manner on the one side of an adhesion-release treated paper. After the spreading, the adhesive layer was dried at first at room temperature for 15 minutes and, then, at 60 °C. in a circulating hot air oven for 90 minutes. The coating weight of the dried adhesive is to be 150 to 300 g/m^2.

The adhesive was laminated onto a closed cell polyethylene foam piece, which had been coated at the other side with a hot-melt adhesive of ethylene/vinyl acetate. Then, holes were punched into the laminate having a suitable diameter of e.g. 30 mm.

A suitable polyethylene film vapor-coated with aluminum was heat-sealed with the hot-melt adhesive layer. Then, pieces of a non-woven fleece of viscose-rayon, surface-treated with polyolefins, were placed into the punched out openings.

The pieces of the non-woven fleece were saturated with the micro-emulsion containing the active ingredients. Subsequently, the one-sided adhesion-release treated paper was removed. Then, a protective polyester film coated with a pattern of an adhesion-release agent applied in squares with an edge length of 3 mm and with a stay width between the squares of 0.5 mm was laminated onto the pressure-sensitive adhesive layer.

Then, the laminate was cut into individual pieces of a suitable size of, e.g., 50 x 60 mm.

LEGEND

1	Polymer film
2	Foamed material piece
3	Adhesive layer
3a	Adhesive
4	Protective paper liner
5	Reservoir (supply)
6	Pull-off strap
7	Adhesive layer, high strength
8	Adhesive layer, repeatedly usable
9	Non-woven fleece tape
10	Adhesive
11	Absorbent material piece (absorbent disk)
12	Filling opening
13	Adhesive layer, repeatedly usable
14	Pull-off strap
15	Cover
16	Protective film (liner)
17	Non-transparent barrier layer
18	Polyethylene foam piece
19	Adhesive layer
20	Hot-melt adhesive layer
21	Reservoir
22	Material piece of an absorbent material
23	Protective polyethylene film
24	Protective film (polyester)
25	Surface (of the polyester film 24)
26	Part-areas
27	Stays

Claims

1. A device, in particular a bandage strip, for a dermal administration of a drug to a patient, with a reservoir (5) for storing and delivering the drug onto the skin of the patient and with a carrier element for carrying the reservoir, whereby this carrier element is provided with a skin-compatible adhesive layer (3), by which the device is adhered to the skin of the patient in the application state, and with a peelable protective liner (4) covering the adhesive layer (3) and the reservoir (5) at the side of delivery in the state of storage, wherein the carrier element is formed by a relatively flat foamed material piece (2) with closed pores and is traversed by punched out holes extending between the opposite surfaces and forming the reservoir (5) in which a highly viscous medium (paste or ointment) is placed as the drug preparation to be slowly diffused through the skin during the application, and wherein a polymer film (1) coated with an adhesive (3a, 7, 8) is removably placed onto the surface of the foamed material piece (2) opposite the side carrying the skin-compatible adhesive layer (3) thereby covering the inlet side of the reservoir (5), and wherein the peelable protective liner (4) consists of an adhesion releasing protective film which prevents a lateral migration during the storage of the device.

2. A device according to Claim 1, wherein the punched out perforating holes have a circular cross-section and are peripherally bordered at the delivery side by the adhesive layer (3).

3. A device according to one of the Claims 1 or 2, wherein the protective film and the polymer film are each provided with a pull-off strap (6) extending beyond the surface of the foamed material piece.

4. A device according to one of the claims 1 to 3, wherein the polymer film (1) is non-transparent and fastened to the foamed material piece (2) by means of two parallel adhesive strips (7,8) and aligned along the crosswise edges, whereby the adhesive strip (7) situated a distance away from the pull-off strap (6) of the polymer film (1) is formed by an adhesive with a high adhesive strength and the adhesive strip (8) adjacent to the pull-off strap (6) is formed by a repeatedly usable adhesive of a low adhesive strength.

5. A device according to one of the claims 1 to 4, wherein the polymer film (1) is transparent and micro-perforated.

6. A device according to one of the claims 1 to 5 wherein the protective film (4) is coated with a pattern of silicone of other adhesion releasing materials at the side facing the adhesive layer (3) in such a way, that a barrier is formed by the remaining non-coated protective film surface in conjunction with the adhesive layer (3) to prevent a lateral migration of the drug preparation into the skin-compatible adhesive layer.

7. A device according to one of the Claims 1 to 6, wherein the coated and non-coated partial areas and of the pattern on the surface of the peelable protective film (4) in contact with the adhesive layer (3) are varied in their sizes and/or in the ratio of their geometrical shapes according to the consistency of the drug preparation for optimizing the barrier effect of the uncoated partial areas and the peelability of the protective film.

8. A device according to one of the Claims 1 to 7, wherein the coated partial areas of the pattern are squares separated by non-coated stays.

9. A device according to one of the Claims 1 to 8, wherein the coated partial areas of the pattern have a circular, triangular, rectangular, elliptic or rhombic shape and the intermediary non-coated partial areas have a correspondingly geometric shape.

10. A device according to one of the Claims 1 to 9, wherein the coated partial form islands and the non-coated stays form a continuous barrier.

11. A device according to one of the Claims 1 to 10, wherein the skin-compatible adhesive consists of components, which prevent a penetration by the drug formulation.

12. A device, in particular a bandage strip, for a dermal administration of a drug to a patient, with a reservoir for storing and delivering the drug onto the skin of the patient and with a carrier element for carrying the reservoir, whereby this carrier element is provided with a skin-compatible adhesive layer (10), by which the device is adhered to the skin of the patient in the application state, and with a peelable protective film (16) (liner) covering the adhesive layer (10) and the reservoir at the side of delivery in the state of storage, wherein the carrier element is formed by a non-woven fleece tape (9) with an adhesive layer (10) attached to its underside and to which an ele-

ment of an absorbent material (11) is adhesively attached forming the reservoir, and wherein a filling opening (12) is provided for at least one low-viscous solution of the drug formulation, whereby this filling opening (12) transverses the non-woven tape (9) and its adhesive layer (10) and forms a communicating connection to the element of an absorbent material (11) saturated with the low-viscous drug solution during the storage of the device, and wherein at the upper side of the non-woven fleece tape (9) a cover (15) is provided coated with a pressure-sensitive repeatedly usable adhesive layer (13) covering the filling opening (12) and wherein the peelable protective film (16) consists of an adhesion releasing protective film which prevents a lateral migration during the storage of the device.

13. A device according to claim 12 wherein the element of an absorbent material (11) consists of a disk, whereby the filling opening (12) is arranged above its center.

14. A device according to any one of preceding claims 12-13 wherein an occlusive barrier layer (17) is attached onto the element (11) at the filling side, whereby the barrier layer (17) is firmly adhered with its side facing away from the element (11) to the adhesive layer (10) of the non-woven fleece tape (9) and is traversed by the filling opening (12) communicating with the element (11).

15. A device according to claim 14 wherein the barrier layer (17) is peripherally extending beyond the element (11).

16. A device according to any one of preceding claims 12-15 wherein the low-viscous solution contains a drug.

17. A device according to any one of preceding claims 12-16 wherein the adhesive layer (10) of the non-woven fleece tape (9) is impermeable to moisture and is non-adsorbent.

18. A device according to any one of preceding claims 12-17 wherein the protective film (16) is coated with a pattern of silicone or other adhesion releasing material at the side facing the adhesion layer (10) in such a way that a barrier is formed by the remaining non-coated protective film surface in conjunction with the adhesive layer to prevent a lateral migration of the drug preparation into the skin-compatible adhesive layer (10).

19. A device according to any one of preceding claims 12-18 wherein the coated and non-coated partial areas and of the pattern on the surface of the peelable protective film in contact with the adhesive layer are varied in their sizes and/or in the ratio of their geometrical shapes according to the consistency of the drug preparation for optimizing the barrier effect of the uncoated partial areas and the peelability of the protective film.

20. A device according to claim 19 wherein the coated partial areas of the pattern are squares separated by non-coated stays.

21. A device according to claim 19 wherein the coated partial areas of the pattern have a circular, triangular, rectangular, elliptic or rhombic shape and the intermediary non-coated partial areas have a correspondingly geometric shape.

22. A device according to either claim 20 or claim 21 wherein the coated partial areas form islands and the non-coated stays form a continuous barrier.

23. A device according to any one of preceding claims 12-22 wherein the skin-compatible adhesive (10) consists of components which prevent penetration by the drug formulation.

24. A device, in particular a bandage strip for a dermal administration of a drug to a patient, with a reservoir (21) for storing and delivering the drug onto the skin of the patient and with a carrier element for carrying the reservoir, whereby this carrier element is provided with a skin-compatible adhesive layer (19) by which the device is adhered to the skin of the patient in the application state and with a peelable protective film (liner) (24) covering the adhesive layer (19) and the reservoir (21) at the side of delivery in the state of storage, wherein the carrier element is formed by a relatively flat foamed material (18) with closed pores, on which an adhesive layer (20) is applied to the surface opposite the side carrying the skin-compatible adhesive layer (19) and wherein the composite structure consisting of the adhesive layer (20) the foamed material (18) and the skin-compatible adhesive layer (19) is traversed by a punched out hole forming a reservoir (21) to be filled with an absorbent material (22) adsorptively containing a micro-emulsion of the drug formulation, and wherein a protective film (23) covering the punched out opening at the filling side is attached to the adhesive

layer (20) thereby preventing a lateral migration of the drugs contained in the micro-emulsion adsorbed at the adsorbent material, and wherein the peelable protective film liner (24) attached to the skin-compatible adhesive layer (19) covers the punched out opening at the delivery side during the storage of the device and the peelable protective film (24) consists of an adhesion releasing protective film, which prevents a lateral migration during the storage of the device.

25. A device according to claim 24, wherein the protective film (23) is vapor coated with aluminium at its bottom side.

26. A device according to any one of preceding claims 24-25 wherein the protective film (24) is heat-sealed with the adhesive layer (20).

27. A device according to any one of preceding claims 24-26 wherein the protective film (24) is coated with a pattern of silicone or other adhesion releasing material at the surface facing the adhesive layer (19) in such a way that a barrier is formed by the remaining non-coated protective film surface in conjunction with the adhesive layer to prevent a lateral migration of the drug preparation contained in the micro-emulsion into the skin-compatible adhesive layer (19).

28. A device according to any one of preceding claims 24-27 wherein the coated and non-coated partial areas and of the pattern on the surface of the peelable protective film (24) in contact with the adhesive layer (19) are varied in their sizes and/or in the ratio of their geometrical shapes according to the consistency of the drug preparation for optimizing the barrier effect of the uncoated partial areas and the peelability of the protective film.

29. A device according to Claim 28, wherein the coated partial areas of the pattern are squares separated by non-coated stays.

30. A device according to Claim 28, wherein the coated partial areas of the pattern have a circular, triangular, rectangular, elliptic or rhombic shape and the intermediary non-coated partial areas have a correspondingly geometric shape.

31. A device according to Claim 28, wherein the coated partial areas form islands and the non-coated stays form a continuous barrier.

32. A device according to any one of preceding claims 24-31 wherein the skin-compatible adhesive (19) consists of components which prevent a penetration by the micro-emulsion containing the drug formulation.

33. A device according to any one of preceding claims 24-32 wherein the adhesive layer (20) is formed by a hot-melt adhesive.

Patentansprüche

1. Vorrichtung, insbesondere ein Verbandstreifen zur Verabreichung eines Medikaments an einen Patienten über die Haut, mit einem Reservoir (5) zur Aufbewahrung und Abgabe des Medikaments auf die Haut des Patienten, und mit einem Trägerelement, welches das Reservoir trägt, wobei das Trägerelement mit einer hautverträglichen Klebstoffschicht (3) versehen ist, mit der die Vorrichtung während der Anwendung auf die Haut des Patienten geklebt wird, und mit einer abziehbaren Schutzschicht (4), die die Klebstoffschicht (3) und das Reservoir (5) während der Lagerung auf der Abgabeseite bedeckt, wobei das Trägerelement aus einem relativ flachen Schaumstoffstück (2) mit geschlossenen Poren besteht und mit ausgestanzten Löchern überzogen ist, die sich zwischen den gegenüberliegenden Flächen erstrecken und das Reservoir (5) bilden, in dem ein hochviskoses Medium (Paste oder Salbe) als Medikament enthalten ist, das während der Anwendung langsam durch die Haut diffundiert werden soll, und wobei eine Polymerfolie (1), die mit einem Klebstoff (3a, 7, 8) beschichtet ist, abnehmbar auf die Oberfläche des Schaumstoffstückes (2) gegenüber der die hautverträgliche Klebstoffschicht (3) tragenden Seite aufgebracht ist, so daß sie die Einlaßseite des Reservoirs (5) bedeckt, und wobei die abziehbare Schutzschicht (4) aus einer die Haftung aufhebenden Schutzfolie besteht, die verhindert, daß es während der Lagerung der Vorrichtung zu einer Migration in seitlicher Richtung kommt.

2. Vorrichtung nach Anspruch 1, bei der die ausgestanzten Perforationslöcher einen kreisrunden Querschnitt besitzen und auf der Abgabeseite an ihrem Umfang an die Klebstoffschicht (3) angrenzen.

3. Vorrichtung nach einem der Ansprüche 1 oder 2, bei der die Schutzfolie und die Polymerfolie jeweils mit einer Abreißlasche (6) versehen sind, die über die Oberfläche des Schaumstoffstückes hinausragt.

4. Vorrichtung nach einem der Ansprüche 1 bis 3, bei der die Polymerfolie (1) undurchsichtig ist und an dem Schaumstoffstück (2) mit Hilfe von zwei parallelen Klebestreifen (7, 8) befestigt und entlang der Querkanten ausgerichtet ist, wobei der im Abstand von der Abreißlasche (6) der Polymerfolie (1) angeordnete Klebestreifen (7) aus einem Klebstoff mit einer hohen Klebekraft besteht, und der an die Abreißlasche (6) angrenzende Klebestreifen (8) aus einem wiederholt verwendbaren Klebstoff mit geringer Klebekraft besteht.

5. Vorrichtung nach einem der Ansprüche 1 bis 4, bei der die Polymerfolie (1) durchsichtig und mit Mikroperforationen versehen ist.

6. Vorrichtung nach einem der Ansprüche 1 bis 5, bei der die Schutzfolie (4) auf der der Klebstoffschicht (3) gegenüberliegenden Seite derart mit einem Muster aus Silicon oder anderen die Haftung aufhebenden Materialien beschichtet ist, daß durch die verbleibende nichtbeschichtete Oberfläche der Schutzfolie in Verbindung mit der Klebstoffschicht (3) eine Sperre entsteht, die verhindert, daß das Medikament in seitlicher Richtung in die hautverträgliche Klebstoffschicht wandert.

7. Vorrichtung nach einem der Ansprüche 1 bis 6, bei der die beschichteten und die unbeschichteten Teilbereiche des Musters auf der Oberfläche der abziehbaren Schutzfolie (4) in Kontakt mit der Klebstoffschicht (3) in ihrer Größe und/oder in dem Verhältnis ihrer geometrischen Formen je nach der Konsistenz des Medikaments verändert werden, um die Sperrwirkung der unbeschichteten Teilbereiche und die Abziehbarkeit der Schutzfolie zu optimieren.

8. Vorrichtung nach einem der Ansprüche 1 bis 7, bei der die beschichteten Teilbereiche des Musters Quadrate sind, die durch unbeschichtete Stege voneinander getrennt sind.

9. Vorrichtung nach einem der Ansprüche 1 bis 8, bei der die beschichteten Teilbereiche des Musters eine kreisrunde, dreieckige, rechteckige, elliptische oder rhombische Form und die dazwischenliegenden unbeschichteten Teilbereiche eine dementsprechend geometrische Form besitzen.

10. Vorrichtung nach einem der Ansprüche 1 bis 9, bei der die beschichteten Teilbereiche Inseln und die unbeschichteten Stege eine durchgehende Sperre bilden.

11. Vorrichtung nach einem der Ansprüche 1 bis 10, bei der der hautverträgliche Klebstoff aus Bestandteilen besteht, in die das Medikament nicht eindringen kann.

12. Vorrichtung, insbesondere ein Verbandstreifen, zur Verabreichung eines Medikaments an einen Patienten über die Haut, mit einem Reservoir zur Aufbewahrung und Abgabe des Medikaments auf die Haut des Patienten, und mit einem Trägerelement, welches das Reservoir trägt, wobei das Trägerelement mit einer hautverträglichen Klebstoffschicht (10) versehen ist, mit der die Vorrichtung während der Anwendung auf die Haut des Patienten geklebt wird, und mit einer abziehbaren Schutzfolie (16) (Überzug), die die Klebstoffschicht (10) und das Reservoir auf der Abgabeseite während der Lagerung bedeckt, wobei das Trägerelement aus einem Vliesband (9) besteht, auf dessen Unterseite eine Klebstoffschicht (10) aufgebracht ist, und auf das ein Element aus einem saugfähigen Material (11) geklebt ist, so daß das Reservoir entsteht, und wobei eine Einfüllöffnung (12) für mindestens eine niedrigviskose Lösung des Medikaments vorgesehen ist, so daß sich diese Einfüllöffnung (12) quer durch das Vliesband (9) und seine Klebstoffschicht (10) erstreckt und eine kommunizierende Verbindung mit dem Element aus saugfähigem Material (11) herstellt, das mit der niedrigviskosen Medikamentenlösung während der Lagerung der Vorrichtung gesättigt wird, und wobei auf der Oberseite des Vliesbandes (9) ein Überzug (15) vorgesehen ist, der mit einer wiederholt verwendbaren Haftkleberschicht (13) bedeckt ist, die die Einfüllöffnung (12) bedeckt, und wobei die abziehbare Schutzfolie (16) aus einer die Haftung aufhebenden Schutzfolie besteht, die während der Lagerung der Vorrichtung eine Migration in seitlicher Richtung verhindert.

13. Vorrichtung nach Anspruch 12, bei der das Element aus saugfähigem Material (11) eine Scheibe darstellt, wo die Einfüllöffnung (12) über ihrer Mitte angeordnet ist.

14. Vorrichtung nach einem der vorhergehenden Ansprüche 12-13, bei der eine abdichtende Sperrschicht (17) an der Einfüllseite auf das Element (11) aufgebracht ist, so daß die Sperrschicht (17) mit ihrer von dem Element (11) wegweisenden Seite fest auf die Klebstoffschicht (10) des Vliesbandes (9) aufgeklebt ist, und die mit dem Element (11) in Verbindung stehende Einfüllöffnung (12) durch sie hindurchreicht.

15. Vorrichtung nach Anspruch 14, bei der die Sperrschicht (17) am Umfang über das Element (11) hinausragt.

16. Vorrichtung nach einem der vorhergehenden Ansprüche 12-15, bei der die niedrigviskose Lösung ein Medikament enthält.

17. Vorrichtung nach einem der vorhergehenden Ansprüche 12-16, bei der die Klebstoffschicht (10) des Vliesbandes (9) feuchtigkeitsundurchlässig und nichtsaugfähig ist.

18. Vorrichtung nach einem der vorhergehenden Ansprüche 12-17, bei der die Schutzfolie (16) auf der der Klebstoffschicht (10) gegenüberliegenden Seite derart mit einem Muster aus Silicon oder einem anderen die Haftung aufhebenden Material beschichtet ist, daß durch die verbleibende unbeschichtete Oberfläche der Schutzfolie in Verbindung mit der Klebstoffschicht eine Sperre entsteht, die verhindert, daß das Medikament in seitlicher Richtung in die hautverträgliche Klebstoffschicht (10) wandert.

19. Vorrichtung nach einem der vorhergehenden Ansprüche 12-18, bei der die beschichteten und die unbeschichteten Teilbereiche des Musters auf der Oberfläche der abziehbaren Schutzfolie in Kontakt mit der Klebstoffschicht in ihrer Größe und/oder in dem Verhältnis ihrer geometrischen Formen je nach der Konsistenz des Medikaments verändert werden, um die Sperrwirkung der unbeschichteten Teilbereiche und die Abziehbarkeit der Schutzfolie zu optimieren.

20. Vorrichtung nach Anspruch 19, bei der die beschichteten Teilbereiche des Musters Quadrate sind, die durch unbeschichtete Stege voneinander getrennt sind.

21. Vorrichtung nach Anspruch 19, bei der die beschichteten Teilbereiche des Musters eine kreisrunde, dreieckige, rechteckige, elliptische oder rhombische Form und die dazwischenliegenden unbeschichteten Teilbereiche eine dementsprechend geometrische Form besitzen.

22. Vorrichtung nach Anspruch 20 oder Anspruch 21, bei der die beschichteten Teilbereiche Inseln und die unbeschichteten Stege eine durchgehende Sperre bilden.

23. Vorrichtung nach einem der vorhergehenden Ansprüche 12-22, bei der der hautverträgliche Klebstoff (10) aus Bestandteilen besteht, in die das Medikament nicht eindringen kann.

24. Vorrichtung, insbesondere ein Verbandstreifen zur Verabreichung eines Medikaments an einen Patienten über die Haut, mit einem Reservoir (21) zur Aufbewahrung und Abgabe des Medikaments auf die Haut des Patienten, und mit einem Trägerelement, welches das Reservoir trägt, wobei das Trägerelement mit einer hautverträglichen Klebstoffschicht (19) versehen ist, mit der die Vorrichtung während der Anwendung auf die Haut des Patienten geklebt wird, und mit einer abziehbaren Schutzfolie (Überzug) (24), die die Klebstoffschicht (19) und das Reservoir (21) auf der Abgabeseite während der Lagerung bedeckt, wobei das Trägerelement aus einem relativ flachen Schaumstoff (18) mit geschlossenen Poren besteht, auf dem eine Klebstoffschicht (20) auf die Oberfläche aufgebracht wird, die der die hautverträgliche Klebstoffschicht (19) tragenden Seite gegenüberliegt, und bei der durch die Verbundstruktur bestehend aus der Klebstoffschicht (20), dem Schaumstoff (18) und der hautverträglichen Klebstoffschicht (19) ein ausgestanztes Loch reicht, welches ein Reservoir (21) darstellt, das mit einem saugfähigen Material (22) zu füllen ist, das eine Mikroemulsion des Medikaments in sich aufgesaugt hat, und wobei eine Schutzfolie (23), welche die ausgestanzte Öffnung auf der Einfüllseite bedeckt, auf die Klebstoffschicht (20) aufgebracht ist, um dadurch zu verhindern, daß die Medikamente in der in das saugfähige Material aufgesaugten Mikroemulsion in seitlicher Richtung wandern, und wobei die auf die hautverträgliche Klebstoffschicht (19) aufgebrachte abziehbare Schutzfolie (24) die ausgestanzte Öffnung auf der Abgabeseite während der Lagerung der Vorrichtung bedeckt, und die abziehbare Schutzfolie (24) aus einer die Haftung aufhebenden Schutzfolie besteht, die während der Lagerung der Vorrichtung ein Wandern in seitlicher Richtung verhindert.

25. Vorrichtung nach Anspruch 24, bei der auf die Unterseite der Schutzfolie (23) Aluminium aufgedampft ist.

26. Vorrichtung nach einem der vorhergehenden Ansprüche 24-25, bei der die Schutzfolie (24) mit der Klebstoffschicht (20) heißversiegelt ist.

27. Vorrichtung nach einem der vorhergehenden Ansprüche 24-26, bei der die Schutzfolie (24) auf der der Klebstoffschicht (19) gegenüberliegenden Seite derart mit einem Muster aus

Silicon oder einem anderen die Haftung aufhebenden Material versehen ist, daß durch die verbleibende unbeschichtete Oberfläche der Schutzfolie in Verbindung mit der Klebstoffschicht eine Sperre entsteht, die verhindert, daß das in der Mikroemulsion enthaltene Medikament in seitlicher Richtung in die hautverträgliche Klebstoffschicht (19) wandert.

28. Vorrichtung nach einem der vorhergehenden Ansprüche 24-27, bei der die beschichteten und die unbeschichteten Teilbereiche des Musters auf der Oberfläche der abziehbaren Schutzfolie (24) in Kontakt mit der Klebstoffschicht (19) in ihrer Größe und/oder in dem Verhältnis ihrer geometrischen Formen je nach der Konsistenz des Medikaments verändert werden, um die Sperrwirkung der unbeschichteten Teilbereiche und die Abziehbarkeit der Schutzfolie zu optimieren.

29. Vorrichtung nach Anspruch 28, bei der die beschichteten Teilbereiche des Musters Quadrate sind, die durch unbeschichtete Stege voneinander getrennt sind.

30. Vorrichtung nach Anspruch 28, bei der die beschichteten Teilbereiche des Musters eine kreisrunde, dreieckige, rechteckige, elliptische oder rhombische Form und die dazwischenliegenden unbeschichteten Teilbereiche eine dementsprechend geometrische Form besitzen.

31. Vorrichtung nach Anspruch 28, bei der die beschichteten Teilbereiche Inseln und die unbeschichteten Stege eine durchgehende Sperre bilden.

32. Vorrichtung nach einem der vorhergehenden Ansprüche 24-31, bei der der hautverträgliche Klebstoff (19) aus Bestandteilen besteht, in die die das Medikament enthaltende Mikroemulsion nicht eindringen kann.

33. Vorrichtung nach einem der vorhergehenden Ansprüche 24-32, bei der die Klebstoffschicht (20) aus einem Schmelzkleber besteht.

Revendications

1. Dispositif, en particulier une bande de pansement, pour l'administration dermique d'un médicament à un patient, avec un réservoir (5) pour le stockage et la libération du médicament sur la peau du patient et avec un élément de support destiné à porter le réservoir, cet élément de support étant muni d'une couche adhésive (3) compatible avec la peau, permettant de faire adhérer le dispositif à la peau du patient lors de l'application, et d'un revêtement protecteur pelable (4) recouvrant lors du stockage la couche adhésive (3) et le réservoir (5) du côté d'administration, dans lequel l'élément de support est formé d'un morceau (2) relativement plat d'une matière en mousse avec des pores clos et est traversé par des trous pratiqués par perforation s'étendant entre les surfaces opposées et formant le réservoir (5) dans lequel est placé un milieu extrêmement visqueux (pâte ou pommade) comme préparation de médicament à faire diffuser lentement à travers la peau au cours de l'application, et dans lequel un film polymérique (1) revêtu avec un adhésif (3a, 7, 8) est placé de manière amovible sur la surface du morceau de matière en mousse (2) opposée au côté portant la couche adhésive (3) compatible avec la peau en recouvrant ainsi la face d'admission du réservoir (5), et dans lequel le revêtement protecteur pelable (4) consiste en un film protecteur libérateur d'adhérence qui empêche une migration latérale au cours du stockage du dispositif.

2. Dispositif suivant la revendication 1, dans lequel les trous pratiqués par perforation possèdent une section transversale circulaire et sont bordés à la périphérie du côté de libération par la couche adhésive (3).

3. Dispositif suivant une des revendications 1 et 2, dans lequel le film protecteur et le film polymérique sont munis chacun d'une patte de séparation (6) s'étendant au-delà de la surface du morceau de matière en mousse.

4. Dispositif suivant une des revendications 1 à 3, dans lequel le film polymérique (1) est non transparent et fixé au morceau de matière en mousse (2) au moyen de deux bandes adhésives parallèles (7, 8) et alignées le long des bords transversaux, la bande adhésive (7) située à une distance de la patte de séparation (6) du film polymérique (1) étant ainsi formée par un adhésif ayant une grande force d'adhésion et la bande adhésive (8) adjacente à la patte de séparation (6) étant formée par un adhésif utilisable de manière répétée, à faible force d'adhésion.

5. Dispositif suivant une des revendications 1 à 4, dans lequel le film polymérique (1) est transparent et microperforé.

6. Dispositif suivant une des revendications 1 à 5, dans lequel le film protecteur (4) est revêtu avec un motif constitué d'une silicone ou d'autres matières de libération d'adhérence du côté faisant face à la couche adhésive (3) d'une manière telle qu'une barrière soit formée par la surface non revêtue restante du film protecteur en association avec la couche adhésive (3) pour empêcher une migration latérale de la préparation médicamenteuse dans la couche adhésive compatible avec la peau.

7. Dispositif suivant une des revendications 1 à 6, dans lequel les zones partielles revêtues et non revêtues et le motif sur la surface du film protecteur pelable (4) en contact avec la couche adhésive (3) sont soumis à des modifications de leurs dimensions et/ou du rapport de leurs formes géométriques en fonction de la consistance de la préparation médicamenteuse pour parvenir à un effet optimal de barrière des zones partielles non revêtues et parvenir à une aptitude optimale au pelage du film protecteur.

8. Dispositif suivant une des revendications 1 à 7, dans lequel les zones partielles revêtues du motif sont des carrés séparés par des montants non revêtus.

9. Dispositif suivant une des revendications 1 à 8, dans lequel les zones partielles revêtues du motif possèdent une forme circulaire, triangulaire, rectangulaire, elliptique ou rhombique et les zones partielles non revêtues intermédiaires possèdent une forme géométrique correspondante.

10. Dispositif suivant une des revendications 1 à 9, dans lequel les zones partielles revêtues forment des îlots et les montants non revêtus forment une barrière continue.

11. Dispositif suivant une des revendications 1 à 10, dans lequel l'adhésif compatible avec la peau est formé de constituants qui empêchent la pénétration par la formulation médicamenteuse.

12. Dispositif, en particulier une bande de pansement, pour une administration dermique d'un médicament à un patient, avec un réservoir pour le stockage et la libération du médicament sur la peau du patient et avec un élément de support pour porter le réservoir, cet élément de support étant ainsi muni d'une couche adhésive (10) compatible avec la peau, permettant de faire adhérer le dispositif à la peau du patient lors de l'application, et d'un film protecteur pelable (16) (revêtement) recouvrant la couche adhésive (10) et le réservoir du côté de libération lors du stockage, dans lequel l'élément de support est formé par un ruban d'une nappe non tissée (9) avec une couche adhésive (10) fixée à sa face inférieure et à laquelle un élément d'une matière absorbante (11) est fixé de manière adhésive en formant le réservoir, et dans lequel un orifice de remplissage (12) est ménagé pour au moins une solution de faible viscosité de la formulation médicamenteuse, cet orifice de remplissage (12) traversant ainsi le ruban non tissé (9) et sa couche adhésive (10) et formant une connexion de communication avec l'élément d'une matière absorbante (11) saturée avec la solution de médicament de faible viscosité au cours du stockage du dispositif, et dans lequel, à la face supérieure du ruban de nappe non tissée (9), se trouve une couche de recouvrement (15) revêtue avec une couche d'un adhésif sensible à la pression utilisable de manière répétée (13) recouvrant l'orifice de remplissage (12) et dans lequel le film protecteur pelable (16) consiste en un film protecteur de libération d'adhérence qui empêche une migration latérale au cours du stockage du dispositif.

13. Dispositif suivant la revendication 12, dans lequel l'élément de matière absorbante (11) consiste en un disque, l'orifice de remplissage (12) étant ainsi situé au-dessus du centre de ce disque.

14. Dispositif suivant l'une quelconque des revendications 12 et 13 précédentes, dans lequel une couche occlusive d'arrêt (17) est fixée à la surface de l'élément (11) du côté de remplissage, la couche d'arrêt (17) adhérant ainsi fermement par sa face extérieure latérale éloignée de l'élément (11) à la couche adhésive (10) du ruban de nappe non tissée (9) et étant traversée par l'orifice de remplissage (12) communiquant avec l'élément (11).

15. Dispositif suivant la revendication 14, dans lequel la couche d'arrêt (17) s'étend à la périphérie au-delà de l'élément (11).

16. Dispositif suivant l'une quelconque des revendications 12 à 15 précédentes, dans lequel la solution de faible viscosité contient un médicament.

17. Dispositif suivant l'une quelconque des revendications 12 à 16 précédentes, dans lequel la

couche adhésive (10) du ruban de nappe non tissée (9) est imperméable à l'humidité et est non adsorbante.

18. Dispositif suivant l'une quelconque des revendications 12 à 17 précédentes, dans lequel le film protecteur (16) est revêtu avec un motif d'une silicone ou d'une autre substance de libération d'adhérence du côté tourné vers la couche adhésive (10) de telle manière qu'une barrière soit formée par la surface non revêtue résultante du film protecteur en association avec la couche adhésive pour empêcher une migration latérale de la préparation médicamenteuse dans la couche adhésive (10) compatible avec la peau.

19. Dispositif suivant l'une quelconque des revendications 12 à 18 précédentes, dans lequel les zones partielles revêtues et non revêtues du motif sur la surface du film protecteur pelable en contact avec la couche adhésive sont soumises à des modifications de leurs dimensions et/ou du rapport de leurs formes géométriques en fonction de la consistance de la préparation médicamenteuse pour parvenir à un effet optimal de barrière des zones partielles non revêtues et une aptitude optimale au pelage du film protecteur.

20. Dispositif suivant la revendication 19, dans lequel les zones partielles revêtues du motif sont des carrés séparés par des montants non revêtus.

21. Dispositif suivant la revendication 19, dans lequel les zones partielles revêtues du motif possèdent une forme circulaire, triangulaire, rectangulaire, elliptique ou rhombique et les zones partielles non revêtues intermédiaires possèdent une forme géométrique correspondante.

22. Dispositif suivant la revendication 20 ou la revendication 21, dans lequel les zones partielles revêtues forment des îlots et les montants non revêtus forment une barrière continue.

23. Dispositif suivant l'une quelconque des revendications 12 à 22 précédentes, dans lequel l'adhésif (10) compatible avec la peau est formé de constituants qui empêchent la pénétration par la formulation médicamenteuse.

24. Dispositif, en particulier une bande de pansement pour une administration dermique d'un médicament à un patient, avec un réservoir (21) pour le stockage et la libération du médicament sur la peau du patient et avec un élément de support destiné à porter le réservoir, cet élément de support étant ainsi muni d'une couche adhésive (19) compatible avec la peau par laquelle on fait adhérer le dispositif à la peau du patient lors de l'application et d'un film (revêtement) protecteur pelable (24) recouvrant la couche adhésive (19) et le réservoir (21) du côté de libération lors du stockage, dans lequel l'élément de support est formé d'une matière en mousse relativement plate (18) à pores fermés, sur laquelle une couche adhésive (20) est appliquée à la surface opposée à la face portant la couche adhésive (19) compatible avec la peau et dans lequel la structure composite consistant en la couche adhésive (20), la matière en mousse (18) et la couche adhésive (19) compatible avec la peau est traversée par un trou pratiqué par perforation formant un réservoir (21) destiné à être rempli avec une matière absorbante (22) renfermant par adsorption une micro-émulsion de la formulation médicamenteuse, et dans lequel un film protecteur (23) recouvrant l'orifice pratiqué par perforation, du côté de remplissage, est fixé à la couche adhésive (20) en empêchant ainsi une migration latérale des médicaments présents dans la micro-émulsion adsorbée à la matière adsorbante, et dans lequel le revêtement constitué d'un film protecteur pelable (24) fixé à la couche adhésive (19) compatible avec la peau recouvre l'orifice pratiqué par perforation du côté de libération au cours du stockage du dispositif et le film protecteur pelable (24) consiste en un film protecteur de libération d'adhérence, qui empêche une migration latérale au cours du stockage du dispositif.

25. Dispositif suivant la revendication 24, dans lequel le film protecteur (23) est revêtu en phase vapeur avec de l'aluminium à sa face inférieure.

26. Dispositif suivant l'une quelconque des revendications 24 et 25 précédentes, dans lequel le film protecteur (24) est thermosoudé avec la couche adhésive (20).

27. Dispositif suivant l'une quelconque des revendications 24 à 26 précédentes, dans lequel le film protecteur (24) est revêtu avec un motif d'une silicone ou d'une autre matière de libération d'adhérence au niveau de la surface tournée vers la couche adhésive (19) de telle manière qu'une barrière soit formée par la surface non revêtue restante du film protecteur en association avec la couche adhésive pour empê-

cher une migration latérale de la préparation médicamenteuse présente dans la micro-émulsion dans la couche adhésive (19) compatible avec la peau.

28. Dispositif suivant l'une quelconque des revendications 24 à 27 précédentes, dans lequel les zones partielles revêtues et non revêtues et le motif sur la surface du film protecteur pelable (24) en contact avec la couche adhésive (19) sont soumis à des modifications de leurs dimensions et/ou du rapport de leurs formes géométriques en fonction de la consistance de la préparation médicamenteuse pour parvenir à un effet optimal de barrière des zones partielles revêtues et à une aptitude optimale au pelage du film protecteur.

29. Dispositif suivant la revendication 28, dans lequel les zones partielles revêtues du motif sont des carrés séparés par des montants non revêtus.

30. Dispositif suivant la revendication 28, dans lequel les zones partielles revêtues du motif possèdent une forme circulaire, triangulaire, rectangulaire, elliptique ou rhombique et les zones partielles non revêtues intermédiaires possèdent une forme géométrique correspondante.

31. Dispositif suivant la revendication 28, dans lequel les zones partielles revêtues forment des îlots et les montants non revêtus forment une barrière continue.

32. Dispositif suivant l'une quelconque des revendications 24 à 31 précédentes, dans lequel l'adhésif (19) compatible avec la peau est formé de constituants qui empêchent une pénétration par la micro-émulsion contenant la formulation médicamenteuse.

33. Dispositif suivant l'une quelconque des revendications 24 à 32 précédentes, dans lequel la couche adhésive (20) est formée d'un adhésif thermofusible.

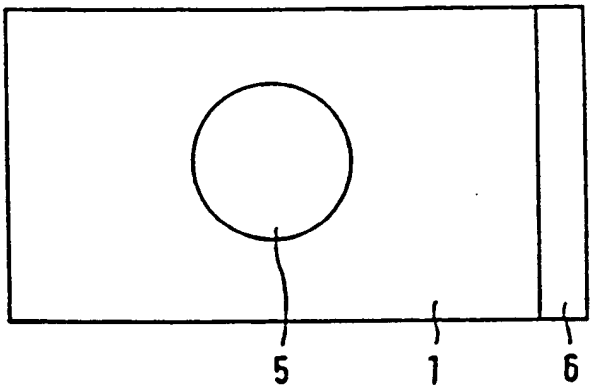

FIG. 1

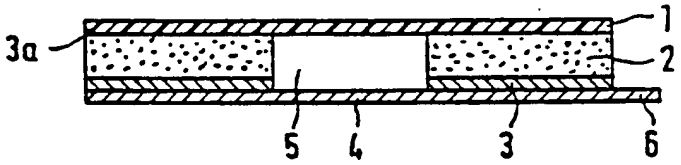

FIG. 2

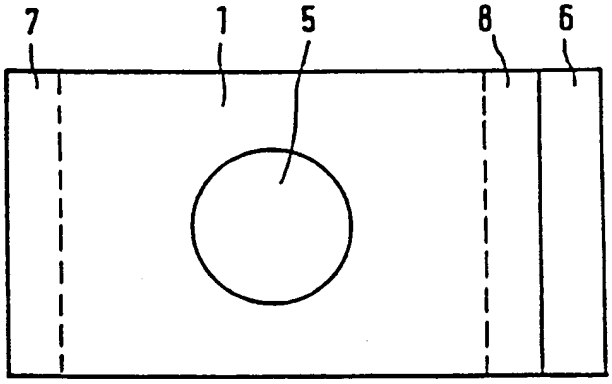

FIG. 3

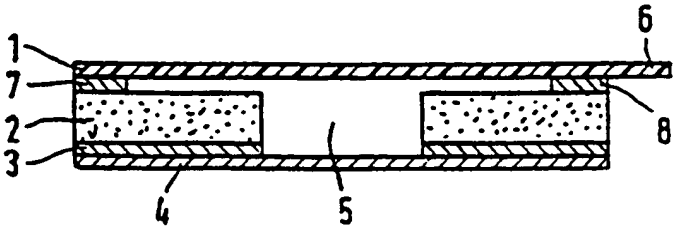

FIG. 4

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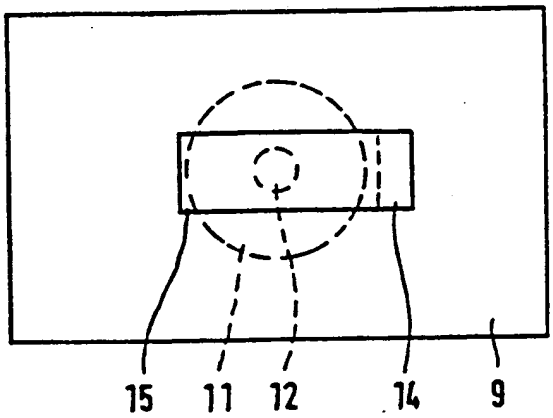

FIG. 5

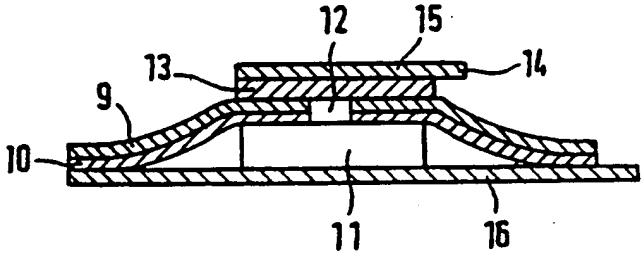

FIG. 6

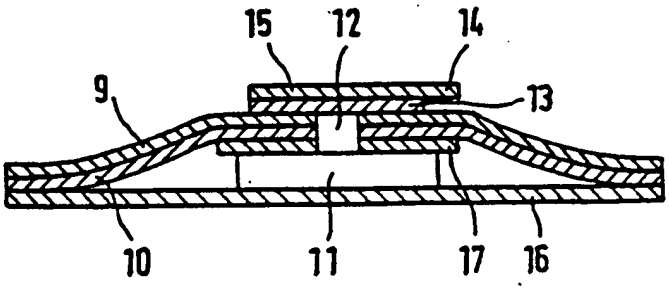

FIG. 7

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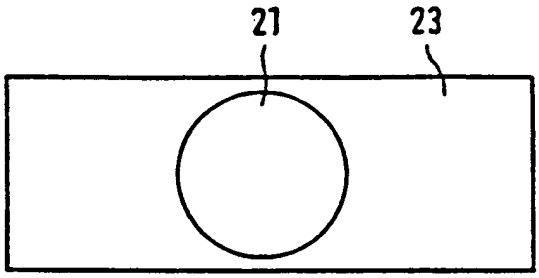

FIG. 9

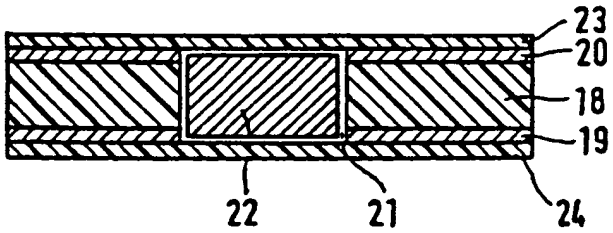

FIG. 8

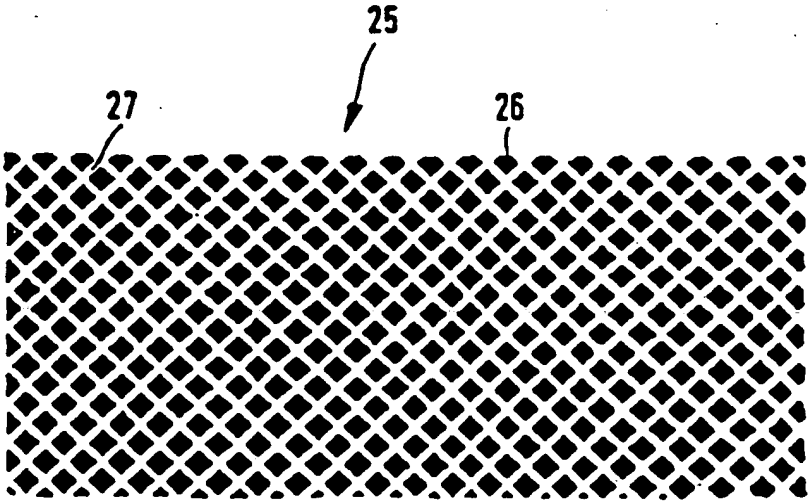

FIG. 10

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